

Conjunctivitis

Overview

The term conjunctivitis refers to inflammation of the conjunctiva; associated corneal involvement gives rise to keratoconjunctivitis and eyelid involvement suggests **blepharoconjunctivitis**. Inflammation can be infective or non-infective in origin and can be further subdivided into acute or chronic conjunctivitis. It is a worldwide condition that can affect any age group with no gender, ethnic or social preponderance. Although it is generally a reasonably trivial problem, it can have a considerable impact on lost work time and, very occasionally, can result in permanent or sight-threatening sequelae.^[1]

If you think that this is a conjunctival problem that is not conjunctivitis, see separate article **Conjunctival Problems** for more about assessing the conjunctiva and for details on:

- Conjunctival trauma.
- Degenerative conditions of the conjunctiva (pinguecula, pterygium, concretions, retention cysts).
- Other inflammatory conditions (mucus fishing syndrome, ligneous conjunctivitis).
- Blistering mucocutaneous diseases (cicatricial pemphigoid, Stevens-Johnson syndrome).
- Conjunctival lesions (pigmented, squamous tumours and other tumours).

Presentation

Symptoms

- Red eye - usually generalised, often bilateral; go through list of differentials if localised.
- Pain - irritation and discomfort is the norm; severe pain suggests something more serious.
- Discharge - variable in nature.
- **Photophobia** - suggests corneal involvement too.
- Visual acuity - should be no, or minimal, reduction. This may be related to tearing and discharge; consider differential diagnosis if there is any significant visual loss.

Signs

- Conjunctival injection - dilated conjunctival vessels.
- Conjunctival chemosis - oedema of the conjunctiva.
- Follicles or papillae.
- Corneal involvement - it is more unusual for this to occur; look out for oedema, neovascularisation and epithelial erosions (small punctate areas of fluorescein uptake).

Assessment

History

If the aetiology is not obvious after a general history is taken, specifically ask about **contact lens** wear, trauma (including chemical and ultraviolet exposure) and symptoms and signs potentially related to systemic disease.^[1]

Examination

- **Wear gloves** if suspecting adenoviral infection - this is incredibly contagious (and clean all equipment after use).
- Look for evidence of generalised malaise and tender preauricular lymph nodes.
- Check the visual acuity.
- External eye: assess for evidence of **orbital cellulitis**, **blepharitis**, herpetic rash or nasolacrimal blockage.

- Conjunctiva: look at the pattern of congestion, discharge and for the presence of follicles or papillae.
 - **Papillae** - these are formed when the conjunctival inflammation is effectively limited by fibrous septa, so giving rise to the appearance of vascular bulges, generally found on the upper tarsal conjunctiva. They can coalesce to form giant (cobblestone) papillae.
 - **Follicles** - these are lymphoid collections and look like raised gelatinous pale bumps (like small grains of rice). They tend to be found on the lower tarsal conjunctiva and along the upper tarsal border.
- Cornea: is there evidence of corneal involvement? Staining is an essential part of the examination.
- Fundoscopy: if you are unsure about the diagnosis.

Investigations

Generally, the diagnosis is rapidly made following history and examination but further investigations are warranted (referral to a specialist) in the following circumstances:^[2]

- Severe purulent discharge.
- Follicular conjunctivitis.
- Neonatal conjunctivitis.
- Unclear aetiology.
- Non-response to conventional treatment.

Differential diagnosis: conditions to rule out before diagnosing conjunctivitis

- **Uveitis**: marked pain, photophobia and possibly decreased visual acuity should ring alarm bells in a 'conjunctivitis' not responding to conventional treatment, particularly in patients with previous episodes (they usually recognise their symptoms) or with systemic illnesses predisposing to uveitis.
- **Glaucoma**: look out for a reduced visual acuity, hazy cornea, fixed pupil and acute systemic malaise.
- **Herpes zoster ophthalmicus**: is there any telltale rash (or severe herpetic pain which can occur before the rash)? This may be associated with conjunctivitis (see below).
- **Keratitis**: this may be associated with conjunctivitis but can occur alone, often secondary to infection (be suspicious of this in contact lens wearers) - look for unilaterality, severe pain and photophobia.
- **Scleritis/episcleritis**: look for unilaterality, localised injection (episcleritis) or an intense, boring pain (scleritis).
- **Foreign body**: this may not be remembered by the patient (a beach walk on a windy day, metal grinding using goggles without lateral protection, a dusty attic spring clean). Evert the lids - you need to look out for follicles and papillae anyway. If you can't find anything but still strongly suspect this, double evert the lids after instilling topical anaesthetic or refer to the ophthalmology team.
- **Trauma**: may not always be remembered by the patient and can be mechanical or chemical.

Which type of conjunctivitis is this?

Conjunctivitis of different aetiologies can appear to present in a similar fashion so here are a few tips:^[3]

Acute symptoms

- Viral - often **adenovirus**, could also be herpes simplex virus (HSV).
- Bacterial - including **gonococcus**.
- Allergic/vernal atopic.
- **Pediculosis** (lice, crabs).

Chronic symptoms (>4 weeks)

- Chlamydia/trachoma.
- **Molluscum contagiosum**.
- Toxic reaction.
- Superior limbic keratoconjunctivitis.

If follicles are present

- **Preauricular lymph nodes not present:**
 - Toxic conjunctivitis, molluscum, pediculosis.
- **Preauricular lymph nodes present:**
 - **With herpetic signs?**
 - Yes = HSV conjunctivitis.
 - No = adenoviral conjunctivitis, chlamydia.

If papillae are present

What kind of discharge is there?

- Severe purulent: *gonococcal infection*.
- Scant purulent: *bacterial other than gonococcus*.
- Watery: *allergic, atopic*.

The rest of this article will provide you with information about viral conjunctivitis and other less common types of conjunctivitis.

To find out more about bacterial conjunctivitis, see separate [Bacterial Conjunctivitis article](#) which covers:

- Simple bacterial conjunctivitis
- [Gonococcal conjunctivitis](#)
- [Chlamydial conjunctivitis](#)

Other related records include:

- [Allergic Conjunctivitis](#)
- [Ophthalmia neonatorum](#)
- [Red Eye](#)

Viral conjunctivitis

Adenoviral conjunctivitis

- **Essence** - a highly infectious condition (incubation: 3-29 days, infectious for a further 2 weeks) which can range from mild to severe symptoms. There are many serotypes of this virus but two broad clinical pictures emerge.^[4]
 - Pharyngoconjunctival fever - more common in children and young adults and typically associated with an upper respiratory tract infection. Corneal involvement occurs in about a third of cases and is mild. Transmission is airborne.
 - Epidemic keratoconjunctivitis - transmission is by contact (fingers, towels, tonometer heads). Systemic features are rare but corneal involvement is more common (up to 80% of cases) and can be severe.
- **Risk factors**^[1] - exposure to an infected individual, upper respiratory tract infection, recent ocular examination.
- **Suggestive symptoms** - itching, burning, watering, often become bilateral within days.
- **Signs to look for** - [eyelid oedema](#), watery discharge, follicles, subconjunctival haemorrhages and pseudomembranes if severe, keratitis (see 'Signs', above), tender preauricular [lymphadenopathy](#).
- **Management** - symptomatic: discontinue contact lens wear until 24 hours after symptoms have fully resolved, cool compresses, lubricants. Advise strict adherence to hygiene measures (hand washing, not sharing towels, and not swimming). Refer to ophthalmology if the cornea becomes involved. In severe or recalcitrant cases, [antihistamines](#) and steroids may be used.^{[2] [3]}
- **Additional notes** - advise patients that symptoms may last 2-3 weeks and may get worse before getting better: they should return if symptoms are not beginning to improve by 1-2 weeks. Current advice is that individuals need not take time off work or school if they are not systemically unwell and that young children need not be excluded from nursery either, unless there is an outbreak.^[5] However, common sense should prevail and many establishments reasonably ask that young children be kept at home until the symptoms have cleared.

Herpes simplex virus (HSV) conjunctivitis

- **Essence**^[6] - usually caused by infection with HSV-1. This occurs equally in young/middle-aged males and females (contrast with herpes zoster virus: more commonly found in the elderly). Primary infection is often subclinical (90% of cases); ocular infection occurs with reactivation of the virus (see 'Risk factors', directly below), which lies dormant in the trigeminal nerve. Neonatal infection is more commonly caused by HSV-2 and occurs during vaginal delivery.
- **Risk factors**^{[1] [3]} - primary HSV infection: exposure to an infected individual. Secondary HSV infection: previous ocular HSV or **cold sores**, physical stress (acute viral or febrile illness, trauma, menstruation), psychological stress, environmental stress (eg ultraviolet light, cold wind).
- **Suggestive symptoms** - unilateral pain, burning, foreign body sensation. Vision may be blurred if there is corneal ulceration in the central visual axis.
- **Signs to look for** - conjunctival injection, watery discharge, follicles. Look for any concurrent herpetic skin vesicles along the lid margin and any palpable preauricular lymph nodes. Corneal staining is imperative to rule out HSV dendritic ulcers: if in doubt, refer to a specialist team to assess for keratitis as this may lead to complications including scarring and severe complications, such as perforation and visual loss.
- **Management** - in the absence of corneal involvement: discontinue contact lens wear. Conservative management is appropriate for this self-limiting condition which usually resolves within 2-3 weeks.^[6] Where there is corneal involvement (or if there has been corneal involvement in previous episodes), refer to an ophthalmology clinic; topical antiviral treatment, such as **aciclovir**, is the norm. If the keratitis is found to be extending deep into the stroma, topical steroids may be used but this is only done under specialist supervision. Some patients with recurrent HSV keratitis are kept on long-term prophylactic oral antivirals.^[7]

Herpes zoster ophthalmicus^[4]

- **Essence** - reactivation of the dormant **varicella zoster virus** after the resolution of the primary infection (chickenpox) gives rise to shingles of the innervated dermatome. In 15% of cases, the eye is affected, so giving rise to herpes zoster ophthalmicus.
- **Risk factors** - physical trauma (including surgery) immunosuppression. Tends to occur in old age.
- **Suggestive symptoms** - prodromal symptoms, pre-herpetic neuralgia, rash.
- **Signs to look for** - pain and rash confined to one dermatome. Note whether the tip of the nose is affected: if it is, there is significant risk of ocular complications (Hutchinson's sign - see separate article **Corneal Problems - Acute**).
- **Management** - start systemic antivirals as soon as you make the diagnosis (eg aciclovir, **valaciclovir** or **famciclovir**) and refer for ophthalmic review. The cornea in particular will be assessed for evidence of complications. However, other parts of the eye and surrounding structures may also be affected and cause glaucoma, uveitis, scleritis, **retinitis**, **neuritis** and **cranial nerve palsies**.

Molluscum contagiosum conjunctivitis

- **Essence**^{[1] [2]} - this oncogenic virus generally infects the skin but occasionally spreads to mucous membranes (including the conjunctiva) of adolescents and young adults. It is commonly found in AIDS patients.
- **Risk factors**^[1] - patients in an **immunocompromised** state.
- **Signs to look for**^{[2] [3]} - unilateral/bilateral, single/multiple, dome-shaped umbilicated shiny nodules on the eyelid or lid margin. There may be conjunctival follicles ± a corneal **pannus** (conjunctiva creeping across the cornea).
- **Management** - refer to ophthalmologists for excision, cryotherapy or cauterisation.

Other types of conjunctivitis^{[1] [2] [3] [4]}

Cicatricial conjunctivitis

This refers to a groups of inflammatory conditions affecting the conjunctiva which lead to scarring, loss of function and, potentially, loss of sight. Primary cicatricial conjunctivitis includes:

- Ocular mucous membrane pemphigoid (OMMP) - thought to be a type II hypersensitivity reaction affecting the basement membrane of mucosal surfaces. Oral mucosa and conjunctiva are most commonly affected. Treatment is with topical steroids and antibiotics but the acute phase of the disease may warrant systemic immunosuppression.
- **Erythema multiforme**, Stevens-Johnson syndrome, **toxic epidermal necrolysis** - acute vasculitides that may be different forms of the same disease, thought to result from a type III hypersensitivity response.

Secondary causes include:

- Trauma - thermal, chemical and radiation trauma may all cause cicatrisation, as can surgery.
- Chronic and severe anterior blepharitis - the reduced tear film associated with this disease can cause chronic irritation and scarring.
- Drugs - these may cause mild-to-severe irritation. Systemic drugs (practolol, penicillamine) and topical drugs (many including timolol and pilocarpine) can have an effect.
- Inherited problems - abnormalities of hair or teeth may suggest **ectodermal dysplasia**.
- Systemic problems - many can cause cicatricial conjunctivitis, including **rosacea**, Sjögren's syndrome and **graft-versus-host disease**.
- Neoplasia - unilateral disease may prompt the thought of sebaceous cell carcinoma, conjunctival intraepithelial neoplasia or squamous cell carcinoma.

Floppy eyelid syndrome

This is a chronic irritation occurring more often in obese patients with **sleep apnoea**. Nocturnal **eyelid ectropion** results in conjunctival contact with bedding. It can occasionally lead to corneal scarring. There will be upper eyelid swelling, diffuse papillary reaction and there may be a pannus. Temporary relief can be achieved with lubricants and taping of the lid. Definitive treatment is surgical.

Giant papillary conjunctivitis

Irritant conjunctivitis which comes about gradually in response to prolonged contact lens wear, presence of ocular prosthesis or to exposed corneal sutures. It is characterised by papillary hypertrophy, a mucoid discharge and, in severe cases, **ptosis**. The irritant is removed and topical mast cell stabilisers are used.

Parinaud's oculoglandular syndrome

This rare condition can arise as a result of **cat scratch disease**, **tularaemia**, sporotrichosis, **tuberculosis**, **syphilis** and **infectious mononucleosis**. It presents with generalised malaise and a unilateral conjunctivitis. It responds to treatment of the underlying cause.

Pediculosis (lice, crabs)

A unilateral/bilateral infection arising from contact with pubic lice. It gives rise to itching, and adult lice will be seen on the lids. Mechanical removal of the lice and their eggs needs to be carried out and an ophthalmic antimicrobial ointment used for the lashes in association with anti-lice treatment to the rest of the body (the patient and sexual partners).

Superior limbic keratoconjunctivitis

This is an uncommon, chronic condition affecting mainly middle-aged women with thyroid dysfunction. Patients complain of nonspecific conjunctivitis-type symptoms (foreign body sensation, burning, mucoid discharge) which wax and wane over many years before eventually resolving. There is thickening of the conjunctiva around the superior corneal limbus, and a corneal pannus, as well as punctate epithelial erosions, may be present. Aggressive lubrication and, occasionally, anti-inflammatories are used.

Toxic conjunctivitis

Prolonged (>1 month) use of **aminoglycosides**, antivirals, drops with preservatives and inappropriate use of over-the-counter preparations containing vasoconstrictors may give rise to an irritant conjunctivitis. Diagnosis is made by exclusion. There will be conjunctival hyperaemia and follicles. Discontinue the offending agent.

Further reading & references

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